

**Amendments to the Claims**

1. – 7. (Cancelled)

8. (New) An network system having a plurality of communicatively interconnected transport network elements, each transport network element comprising:

a traffic selector to switch a transport network element between listening to network traffic received over a primary traffic circuit and listening to network traffic received over a secondary traffic circuit;

a split module to send output traffic either to the primary traffic circuit or to the secondary traffic circuit; and

an agent to switch the traffic selector between the primary traffic circuit and the secondary traffic circuit, and to exchange messages with a remote agent associated with a remote transport network element to control activation and deactivation of the secondary traffic circuit, the messages comprising:

an Activate message to activate the secondary traffic circuit and to communicate the completion of the secondary traffic circuit activation to the remote agent;

a RevertRequest message to request the remote agent to deactivate a previously activated secondary traffic circuit; and

a Revert message to deactivate the secondary traffic circuit responsive to receiving a RevertRequest message from the remote agent.

9. (New) The network system of claim 8 wherein the agent is configured to detect a failure at an input of the primary traffic circuit.

10. (New) The network system of claim 9 wherein responsive to the agent detecting the failure, the agent is configured to switch the traffic selector to receive the network traffic over the secondary traffic circuit and send the Activate message if the secondary traffic circuit is not already activated.

11. (New) The network system of claim 10 wherein the agent is further configured to detect that the failure no longer exists, and to switch the traffic selector to receive the network traffic over the primary traffic circuit and send the RevertRequest message to the remote agent responsive to the detection.

12. (New) The network system of claim 11 wherein the agent is further configured to receive a RevertRequest message from the remote agent, and reply to the remote agent by sending the Revert message to tear-down the secondary traffic circuit if the traffic selector is already switched to receive the network traffic on the primary traffic circuit.

13. (New) The network system of claim 12 wherein the agent comprises logic to implement a sub-network connection protection mechanism having a NoRequest state and a AutoSwitch state.

14. (New) The network system of claim 13 wherein the logic entering the NoRequest state indicates that no failure is detected at the input of the primary traffic circuit and that the traffic selector is switched to receive the network traffic over the primary traffic circuit.

15. (New) The network system of claim 14 wherein the logic entering the AutoSwitch state indicates that a failure has been detected at the input to the primary traffic circuit and that the traffic selector is switched to receive the network traffic over the secondary traffic circuit.

16. (New) The network system of claim 15 wherein the agent is configured to switch the sub-network connection protection mechanism to the NoRequest State responsive to receiving a Revert message from a remote agent.

17. (New) The network system of claim 8 wherein the network comprises an Synchronous Digital Hierarchy (SDH) transport network.

18. (New) A method of activating and deactivating a pre-programmed secondary traffic path in a transmission network having a plurality of communicatively interconnected transport network elements, each transport network element including an agent to control activation and deactivation of a primary traffic circuit and a secondary traffic circuit, the method comprising:

- sending an Activate message from a first transport network element to a second transport network element to activate a secondary traffic circuit that interconnects the first and second transport network elements;
- sending a RevertRequest message from the first transport network element to the second transport network element to request deactivation of the secondary traffic circuit at the second transport element; and
- sending a Revert message from the first transport network element to the second transport network element to indicate that the secondary traffic circuit has been deactivated at the first transport element responsive to receiving a RevertRequest message from the second transport network element.

19. (New) The method of claim 18 further comprising:

detecting a failure at an input to a primary traffic circuit associated with the first transport network element;

activating a sub-network connection protection mechanism at the first transport network element responsive to detecting the failure, the sub-network connection protection mechanism assuming:

a NoRequest state to indicate that no failure is detected at the primary traffic circuit, and that the first transport network element is configured to receive network traffic over the primary traffic circuit; and

an AutoSwitch state to indicate that a failure has been detected at the primary traffic circuit, and that the first transport network element is configured to receive the network traffic over the secondary traffic circuit.

20. (New) The method of claim 19 wherein activating a sub-network connection protection mechanism comprises generating the sub-network connection protection mechanism if the sub-network connection protection mechanism does not already exist.

21. (New) The method of claim 20 further comprising:

switching the sub-network connection protection mechanism to the AutoSwitch state responsive to detecting an error;

switching a traffic selector at the first network element to receive the network traffic over the secondary traffic circuit; and

sending the Activate message.

22. (New) The method of claim 21 further comprising:

detecting when the failure no longer exists;  
switching the sub-network connection protection mechanism to the NoRequest status;  
switching the traffic selector at the first network element to receive the network traffic over  
the primary traffic circuit; and  
sending the Revert Request message to the second transport network element.

23. (New) The method of claim 22 further comprising:

receiving a RevertRequest message at the first transport network element from the second  
transport network element; and  
sending a Revert message to the second transport network element to deactivate the  
secondary traffic circuit if the sub-network connection protection mechanism is in the  
NoRequest status.

24. (New) The method of claim 23 further comprising switching the sub-network connection  
protection at the first transport network element to the NoRequest state responsive to receiving  
a Revert message from the second transport network element.